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SHORT NOTES

First Record of the Poorly Known Skink *Sphenomorphus oligolepis* (Boulenger, 1914) (Reptilia: Squamata: Scincidae) from Seram Island, Maluku Province, Indonesia

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Abstract Based on four specimens discovered in the collection of The Natural History Museum, London, United Kingdom, we present a new distribution record for the skink *Sphenomorphus oligolepis* for Seram Island, Maluku Province, Indonesia. This find constitutes the westernmost record for the species and extends its range by over 800 km. The species was heretofore only known from apparently isolated mainland New Guinean populations.

Keywords Scincidae, Lygosominae, *Sphenomorphus oligolepis*, new record, Seram, Maluku Islands, Indonesia, Wallacea

1. Introduction

Sphenomorphus oligolepis (suggested common name: MIMIKA FOREST SKINK) is a member of the *S. maindroni* group (sensu Greer and Shea, 2004). It is a poorly known skink with apparently disjunct populations on mainland New Guinea and has experienced a very limited treatment in the scientific literature (e.g., de Rooij, 1915; Greer, 1973; Greer and Shea, 2004). The species has been reported from the Mimika River (the type locality; Boulenger, 1914) and the Lorentz River, Papua Province, Indonesia (de Rooij, 1915), and more recently from several localities in Papua New Guinea (see Greer, 1973: Figure 8), including Bikim, Matkomrae, and Mendua (Western Province); Soliabeda (Simbu Province), and Oroi (Gulf Province). Additional specimens housed in the Museum of Comparative Zoology, Cambridge, Massachusetts, USA (MCZ) and the Bernice P. Bishop Museum, Honolulu, Hawaii, USA (BPBM) were collected in Gulf Province at Kikori (MCZ R-150879) and Weiana (MCZ R-101484), and in Morobe Province at Aseki (BPBM Herp-17441–48; 19103–09), with a single voucher collected at Timika, Papua Province, Western New Guinea, Indonesia (BPBM Herp-42441). The westernmost record of *S. oligolepis* known to date is the type locality, and the species has never been recorded from localities other than on mainland New Guinea. Here we report a first record of *S. oligolepis* from Seram Island, Maluku Province, Indonesia (for a distribution map see Figure 1).

2. Material and Methods

During a taxonomic investigation of skinks in the collection of The Natural History Museum, London, United Kingdom (BMNH), two of the authors (HK and SM) discovered four specimens of a scincid lizard from Seram Island, Maluku Province, Indonesia, labeled "*Sphenomorphus* sp. A" (BMNH 1998.299–303; Figure 2).

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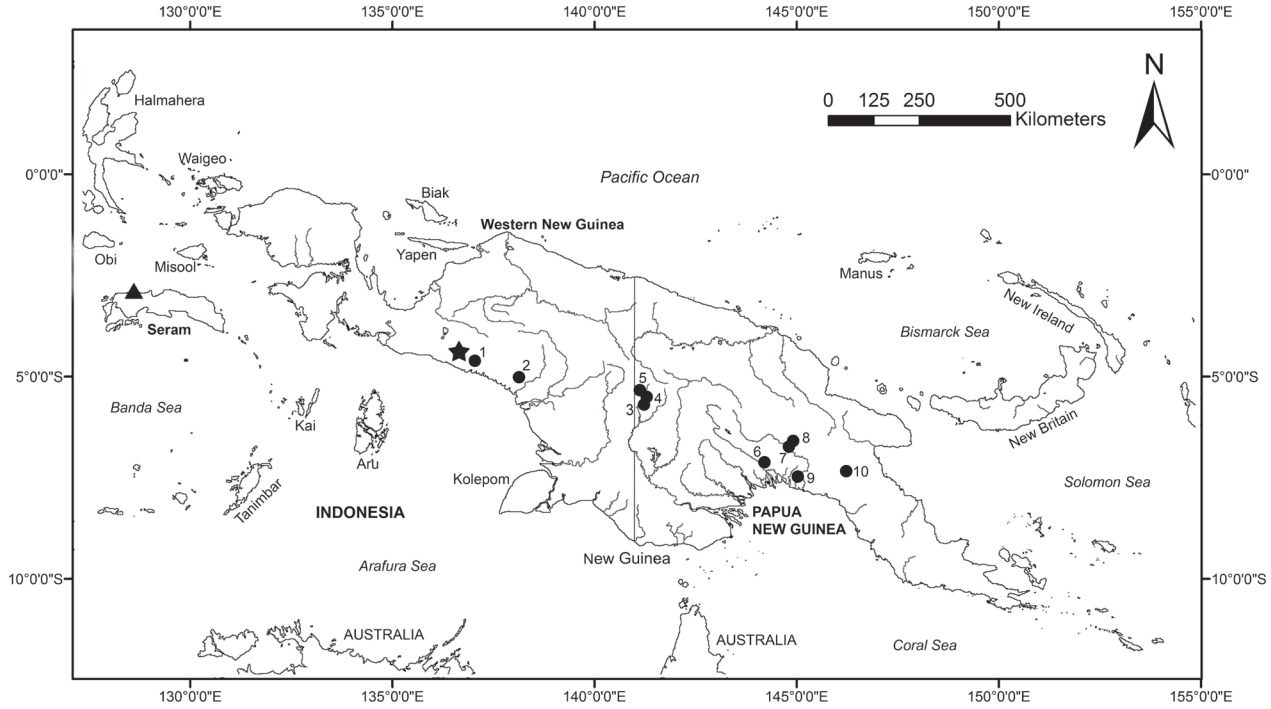

Figure 1 Distribution of *Sphenomorphus oligolepis* in New Guinea and in the Moluccas (black symbols). The type locality of the species (Mimika River, West Papua, Indonesia; BMNH 1946.8.3.47–48) is indicated by a star. The triangle denotes the new distribution record for Seram Island, Maluku Province, Indonesia (BMNH 1998.299–302). Numbers accompanying black circles identify the following known localities for *S. oligolepis*: (1) Lorentz River (de Rooij, 1915), (2) Timika, Nayaro Settlement (BPBM Herp-42441), (3) Matkomrae (MCZ R-130716), (4) Menuda (MCZ R-130717), (5) Bikim (MCZ R-130718), (6) 30 km N, 14 km W Kikori (MCZ R-150879), (7) Weiana (MCZ R-101484), (8) Soliabedo (MCZ R-118857), (9) Oroi (MCZ R-109330–45, 118854–56; WAM R-67631–32), (10) Aseki (BPBM Herp-17441–48; 19103–09). Map prepared by Sven Mecke.

The four specimens had been caught by Paul Edgar and Ronald Lilley in pitfall traps in a lowland rainforest (elevation ca. 50 m) near Solea, northwestern Seram, in late August and early September 1987, during a herpetofaunal survey of the island. Climate data for the collection locality and survey methods were summarized in detail by Edgar and Lilley (1993).

Comparative measurements and scale counts (Table 1) of "*Sphenomorphus* sp. A" and other museum specimens examined were performed according to the following protocol. Measurements were taken on the right side of the body to the nearest 0.1 mm using digital calipers. Eidonomic characters (abbreviations provided in parentheses) used include snout-vent length (SVL), measured from tip of snout to cloaca; tail length (TailL), measured from cloaca to tip of tail; arm length (ArmL), measured from axilla to tip of longest finger; leg length (LegL), measured from point of posterior body insertion to tip of longest toe; head length (HeadL), measured from tip of snout to anterior edge of ear opening, head width (HeadW), measured at widest point of head; number of scales rows at midbody (MBSR), number of nuchal scales (NS), number of paravertebral scales (PVS), counted in one row beginning with the first nuchal scale to the first scale fully anterior to the rear edge of the hindlimbs; number of supralabials (SupraLab); number of supracilaries (SupraCil), and the number of enlarged lamellae under the 4th toe (4TLam), counted as all scales wider than the plantar scales distal to the cleft between the 3rd and 4th digits. We also calculated the following ratios: ArmL/SVL, LegL/SVL, HeadL/SVL. Greer (1973) found female specimens of *S. oligolepis* to be gravid at a minimal SVL of 43.0 mm. Hence, we assume that the four unsexed specimens from Seram (minimal SVL 48.0 mm) are adults.

3. Results and Discussion

The four specimens could be easily identified as members of the *Sphenomorphus maindroni* group (sensu Greer and Shea, 2004; 22 species recognized) by the presence of a post-supraocular scale. While the highest species diversity of the *S. maindroni* group is found in New Guinea, members of this assemblage also occur in the Bismarck Archipelago and the Solomon Islands, the southern part of the Philippines, Palau, and some of the Moluccan Islands

Table 1 Morphometric (in mm) and meristic data of the four specimens of *Sphenomorphus oligolepis* from Seram Island, Maluku Province, Indonesia (BMNH 1998.299–302), and of the two syntypes of this species (BMNH 1946.8.3.47–48). Only characters that allow comparison with data in the relevant literature are shown. When meristic characters occurring bilaterally where different on both sides of the body, this is indicated by the letters 'R' (right) and 'L' (left). Otherwise the respective character is represented by a single value. When tails were found to be partly regenerated, this is indicated by a superscript 'R' after TailL. Numbers in square brackets show sample sizes (individuals) or cases, if the superscript 'C' is used. Numbers in parentheses refer to mean values or, when underlined, modal values.

SPECIMEN OR REFERENCE	CHARACTERS													
	SVL	TailL	ArmL	ArmL/SVL	LegL	LegL/SVL	HeadL	HeadL/SVL	HeadW	MBSR	NS	SupraLab	SupraCil	4TLam
BMNH 1998.299	48.8	31.5^{R}	7.7	0.16	11.3	0.23	8.0	0.16	6.1	24	3R 0L = 3 total	7	7	9R 10L
BMNH 1998.300	48.0	47.2^{R}	5.8	0.12	10.6	0.22	7.8	0.16	6.1	24	4 = 8 total	7	6R 7L	9
BMNH 1998.301	50.6	broken	7.0	0.14	10.8	0.22	7.7	0.15	6.0	24	0	7	7	9R 10L
BMNH 1998.302	49.5	41.4^{R}	6.9	0.14	11.9	0.24	8.1	0.14	6.1	28	0	7	7	9R 10L
BMNH 1946.8.3.47 (syntype)	54.5	57.5^{R}	7.5	0.14	12.0	0.22	8.6	0.16	6.8	24	3R 3L = 6 total	7	7	10
BMNH 1946.8.3.48 (syntype)	53.5	tail-stump	7.5	0.14	12.0	0.23	8.6	0.16	6.3	24	4R 3L = 7 total	7	7	11
Boulenger, 1914	55.0	60^{R}	10.0	-	13.0	-	12.0[a]	-	-	24	6–10 total	-	7	12–13
Greer, 1973	max. 55.0; gravid ♀♀ 43.0–53.0	-	-	-	-	-	-	-	-	24–28 (26)	-	6–7	-	9–12
Greer and Shea, 2004	51–55 [5]	-	-	-	-	-	-	-	-	24–28 (26.6) [5]	5–13 total (8.2) [5]	7 (see key)	-	9–12 [9^{C}]

[a] Boulenger measured HeadL from the tip of the snout to the occipital condyle (Boulenger 1885).

(Greer and Shea, 2004).

Identification of the four *Sphenomorphus* specimens from Seram as *S. oligolepis* was confirmed eidonomically, based on the descriptions in Boulenger (1914), de Rooij (1919), Greer (1973), and the diagnostic characters presented by Greer and Shea (2004), who also provided a key to the members of the *S. maindroni* group. We also examined the syntypes of *S. oligolepis* (BMNH 1946.8.3.47–48; Figure 3) for direct comparison.

In overall eidonomy (size, body proportions, scalation, general aspects of coloration), the specimens from Seram conform to the descriptions of *Sphenomorphus oligolepis* as presented in the relevant literature (Boulenger, 1914; de Rooij, 1915; Greer, 1973; Greer and Shea 2004). Morphometric and meristic data for the specimens (Table 1) show that they fall well within the range of *S. oligolepis*, although the data available in the literature are quite limited. The Seram specimens are also diagnosable as *S. oligolepis* using the identification key of Greer and Shea (2004). In addition, the last supralabial scale in the Seram specimens is divided, as is typical for *S. oligolepis* (Glenn Shea, in litt.). Moreover, eidonomic data of the *Sphenomorphus* specimens from Seram also conform to those of the syntypes of *S. oligolepis* (Table 1)[1]. We therefore conclude that the Seram specimens provisionally labeled "*Sphenomorphus* sp. A" are members of this species, which is hereby recorded for the first time as part of the Seram herpetofauna. This record for *S. oligolepis* is the westernmost record for the species, and the first non-New Guinean; it is the first from the biogeographic region known as Wallacea.

Sphenomorphus oligolepis is readily distinguishable from *S. undulatus*, the only other species of the *S. maindroni* group known from Seram (de Rooij, 1915; Dunn, 1927; Edgar and Lilley, 1993) by separated prefrontal scales (vs. prefrontals in medial contact in *S. undulatus*), a single infralabial in contact with the postmental (vs. two infralabials in contact with the

[1]Data on the number of PVS in *S. oligolepis*, although available for most other *S. maindroni* group members, are not provided in the relevant literature. Although our examination of the Seram specimens yielded PVS counts different from those of the type specimens of *S. oligolepis* (63–69 in the Seram specimens, and 57 and 58 in the type series of *S. oligolepis*), Glenn Shea examined 38 specimens of *S. oligolepis* and obtained a PVS range of 55–73 (Glenn Shea, unpubl. data), indicating that this character is much more variable than in the type series.

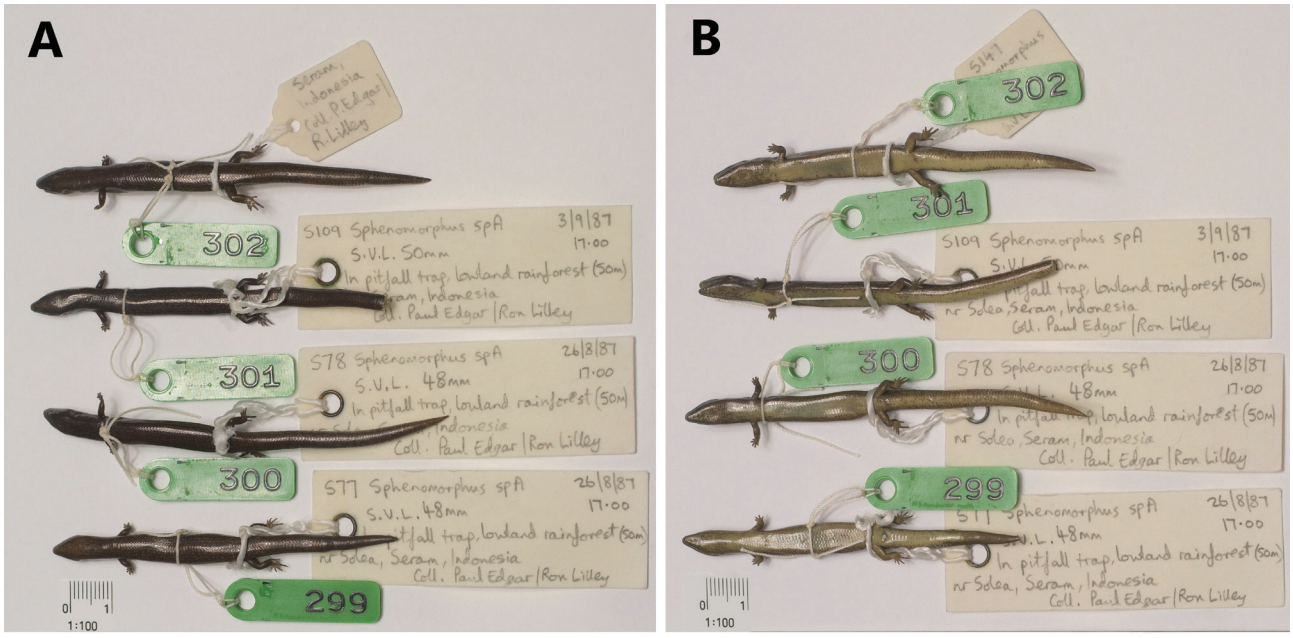

Figure 2 *Sphenomorphus oligolepis* (BMNH 1998.299–302) from Seram Island, Maluku Province, Indonesia. (A) Specimens in dorsal view. (B) Specimens in ventral view. Scale = 10 mm. Photos by Thomas Beitz.

postmental in *S. undulatus*), and a much lower number of 4TLam (9–12 vs.17–23 in *S. undulatus*) (see Greer and Shea, 2004: Table 2 and Key to Species; pers. obs.).

The species (listed as "*Sphenomorphus* sp. A") was reported to be diurnal and fossorial by Edgar and Lilley (1993). According to these authors, on Seram it was found in lowland rainforest (50 m) and in forest above 700 m, but no voucher specimens were obtained from the higher locality. In a lowland rainforest near Solea, northwestern Seram, *S. oligolepis* occurs in syntopy with three species of geckos, a dibamid, five skinks, two blindsnakes, one colubrid snake, and one elapid snake species (Edgar and Lilley, 1993: Table 4).

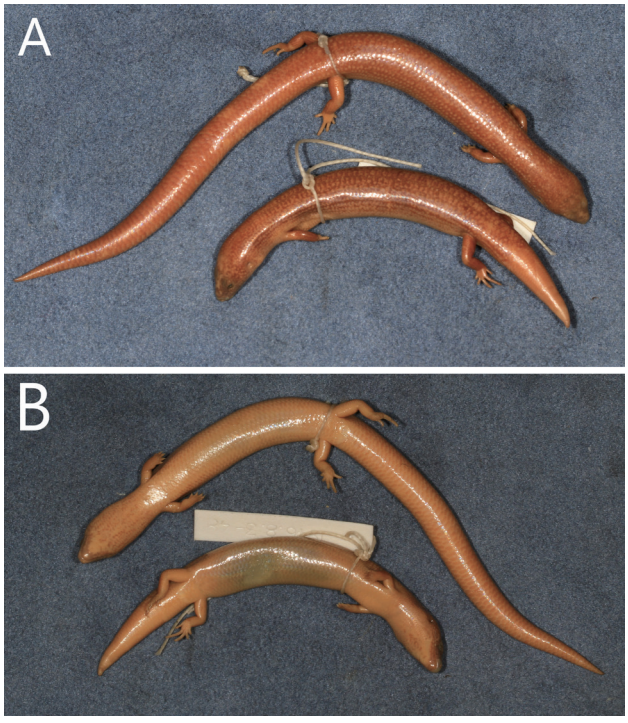

Figure 3 Syntypes of *Sphenomorphus oligolepis* (BMNH 1946.8.3.47–48) in (A) dorsal and (B) ventral view. Photos by Mark O'Shea.

Sphenomorphus oligolepis appears to be a widely, though not necessarily continuously, distributed species in southern New Guinea (distribution extends ~1200 km from west to east; Figure 1), where it has been found in lowland rainforests and freshwater swamp forests (elevations 0–550 m), but also at higher elevations in the lower montane southeastern Papuan rainforests (elevations up to 1250 m). It might be expected that the species also occurs in the lowland rainforests of the 'neck' of the Vogelkop Peninsula (West Papua Province, Indonesia), and further range extensions in the western part of New Guinea can be expected. These would fill the largest known distribution gap for *S. oligolepis* (linear distance of > 800 km; Figure 1).

It should be noted that many mainland New Guinean lizard taxa have rather discontinuous distribution patterns, often with larger gaps between isolated populations (see distribution maps provided by Allison and Kraus, 2011). Obvious distribution gaps might be the result of a true spatial separation of single species (intraspecific allopatry) or represent potential interspecific barriers between

similar looking, though different taxa (interspecific allopatry in an undiscovered biodiversity). However, distribution gaps might rather reflect an undersampling bias.

Some of these taxa with spatially separated populations are also found on islands west of New Guinea, including Seram. Examples may be the gecko *Cyrtodactylus papuensis*, and the skinks *Eugongylus rufescens*, *Sphenomorphus muelleri*, *Sphenomorphus undulatus*, and *Tiliqua gigas* (Brongersma, 1953; de Rooij, 1915; Dunn, 1927; Shea, 2000).

The absence of records of *Sphenomorphus oligolepis* between the type locality and Solea, Seram (including the 'neck' of the Vogelkop Peninsula and eastern Seram) may be explained by an undersampling bias resulting from (1) under-collection in areas potentially difficult to access; and (2) the semifossorial habit of this taxon, which makes it difficult to find individuals (especially by expeditions not primarily focusing on herpetofauna species and if no pitfall traps were used). Voucher specimens were thus almost exclusively collected by experienced herpetologists (Fred Parker, Allen Allison) and predominantly during more recent expeditions to Papua New Guinea.

The presence of *Sphenomorphus oligolepis* in Seram increases to three the number of *Sphenomorphus* skinks known from this island and, together with recent species descriptions from the region (e.g., Harvey *et al*., 2000; Oliver *et al*., 2009; Vogel and van Rooijen, 2008; Weijola and Sweet, 2010; Ziegler *et al*., 2007), demonstrates how little is known about the herpetofauna of the Moluccas (Maluku and North Maluku Provinces).

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